CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

DATE: June 27, 2003

TO: Interested Parties

FROM: Nancy Tronaas, Compliance Project Manager

SUBJECT: **Elk Hills Power Project (99-AFC-1C)**
Public Review of Staff Analysis of Proposed Project Modifications to Increase Startup/Shutdown Emissions, Modify Cooling Tower Operations, and Increase Power of Emergency Fire Water Pump Engine

On April 30, 2003, the California Energy Commission (Energy Commission) received a petition from Elk Hills Power, LLC, to amend the Energy Commission Decision for the Elk Hills Power Project (EHPP). EHPP is a nominal 500 MW natural gas-fired, combined-cycle power plant located within the Elk Hills Oil and Gas field, approximately 25 miles west of Bakersfield, between the communities of Buttonwillow and Taft, in Kern County. The power plant scheduled to commence commercial operation in June 2003.

Elk Hills Power is proposing to (1) increase the startup and shutdown emission limits for nitrogen oxides, carbon monoxide, and volatile organic compounds on an annual, daily, and per event basis, with a corresponding change in the quantity of offsets to be surrendered to the San Joaquin Valley Air Pollution District, (2) modify the operation of the cooling tower to improve water use efficiency, which will result in a slight increase in particulate matter emissions, and (3) increase the power of the emergency fire water pump engine.

Energy Commission staff reviewed the petition and assessed the impacts of the proposed modifications on environmental quality, public health and safety. It is the Energy Commission staff's opinion that, with the implementation of staff's proposed revised conditions of certification, the project will remain in compliance with applicable laws, ordinances, regulations, and standards, and that the proposed project modification will not result in a significant adverse direct or cumulative impact to the environment (*Title 20, California Code of Regulations, Section 1769).*

The staff analysis is attached for your information and review. Energy Commission staff intends to recommend approval of the petition at the July 23, 2003 Business Meeting of the Energy Commission. If you have comments on this proposed project change, please submit them to me at the address above no later than 5 P.M. on July 22, 2003. If you have any questions, please call me at (916) 654-3864 or e-mail at ntronaas@energy.state.ca.us.

Attachment

Elk Hills Power Project (99-AFC-1)
Staff Assessment of Petition to Amend the
Air Quality Conditions of Certification 13, 15, 16, 17, 18, 21, 49 & 50
Prepared by: Joseph M. Loyer
June 25, 2003

Amendment Request

Elk Hill Power, LLC (EHP) has filed a petition (dated April 25, 2003) to modify Conditions of Certification AQ-13, -15, -16, -17, –18, -21, -49 and –50 of the Elk Hill Power Project (Elk Hills) Commission Decision. These modifications reflect increased emission limits during startup and shutdown, increased amount of offsets surrendered, increased water conservation related to operation of the cooling tower, increased size of the diesel powered firewater pump and decreased PM10 emissions limits.

Background

EHP was granted a license by the California Energy Commission on December 6, 2000 for a 500 megawatt, natural gas fired, combined cycle facility consisting of two GE Frame 7FA turbines with heat recovery steam generators (HRSG), oxidation catalyst, ammonia injected selective catalytic reduction system (SCR) and one steam turbine. Elk Hills is located on a 12 acre site, approximately 25 miles west of Bakersfield in Kern County, California, within the jurisdiction of the San Joaquin Valley Air Pollution Control District (District).

On October 24, 2001, Pursuant to the Governor's Order D-25-01, EHP was granted an administrative modification to their petition to modify Condition of Certification AQ-C2, regulating diesel emissions from construction equipment, to make minor corrections and provide needed clarifications. On March 3, 2003, EHP was granted their petition to amend Condition of Certification AQ-21 and appended Conditions of Certification AQ-63 through –65, to allow for tendering of PM10 emission reduction credits (ERC) and allow for excess emissions during the commissioning period.

Laws, Ordinances, Regulations and Standards

EHP has submitted an application for modification to the District to modify the Elk Hills Determination of Compliance (DOC) as of March 23, 2003. The District issued a Final Determination of Compliance (FDOC) on June 20, 2003. EHP has also submitted an application to the United States Environmental Protection Agency (EPA) to modify the Elk Hills Prevention of Significant Deterioration Permit (PSD) as of April 9, 2003. EHP is reasonably confidant that EPA will approve this application. Other than modification to the existing DOC and PSD permits, no laws, ordinances, regulations or standards will affect the petitioned amendment requests.

Analysis

Increase of Startup and Shutdown Emission Limits

When the Elk Hills facility was originally licensed, the startup and shutdown emission performance of the GE Frame 7FA turbines was not well documented. Through the required process of initial source testing at other facilities using like turbines, EHP has determined that it is not possible for the Elk Hills facility to comply with the original startup and shutdown emission limits. These limits are specified in Condition of Certification AQ-13 and incorporated into the limits of Conditions of Certification AQ-16 (daily limits, each turbine), AQ-17 (daily limits, both turbines) and – AQ-18 (annual limits). Based on recent commissioning of similar combustion turbine facilities and assistance from the vendor, EHP is proposing to increase the emission limits as shown in Table 1. Based on a review of the source tests performed at both the Sunrise and Moss Landing facilities during startup, staff concurs that the EHP proposed emission limits are within reason and reflect current knowledge of the GE Frame 7FA performance. The District has re-issued a DOC to reflect these emission limit changes, and as such, the District has performed an air dispersion modeling analysis that concludes that these emission limits will not cause or contribute to an exceedance of the federal or state ambient air quality standards. Therefore, staff supports the proposed emission limits.

Table 1
Proposed Startup and Shutdown Emission Limit Changes

Pollutant	Condition of Certification	Current Limit	Proposed Limit
NO2	AQ-13	76 lbs in any one hour[a,c]	400 lbs/hour[a,c]
	AQ-16	418.5 lbs/day[b]	752.0 lbs/day[b]
	AQ-17	817.8 lbs/day[a]	1103.0 lbs/day[a]
	AQ-18	285,042 lbs/year[a]	335,022 lbs/year[a]
CO	AQ-13	38 lbs in any one hour[a,c]	3,600 lbs/hour[a,c]
	AQ-16	326.7 lbs/day[b]	3,948.0 lbs/day[b]
	AQ-17	640.4 lbs/day[a]	4,297.0 lbs/day[a]
	AQ-18	223,040 lbs/year[a]	831,008 lbs/year[a]
VOC	AQ-16	96.0 lbs/day[b]	184.0 lbs/day[b]
	AQ-17	192.0 lbs/day[a]	269.0 lbs/day[a]

[a] Combined emissions from both gas turbines exhaust stacks.
[b] Emissions from a single gas turbine exhaust stack.
[c] Emission limits apply to a startup or shutdown event only.

However, EHP does not rule out the possibility that the Elk Hills facility might not be able to meet these proposed limits, as it has not been commissioned (or initial source tested) at this time. EHP has agreed to propose a NOx annual emission limit that is lower than the Elk Hills potential to emit at the request of the District to classify the permit change as a minor modification under District rules. Thus, while staff considers the NOx annual emission limit to be attainable by Elk Hills (if by no other means than not operating for a portion of the year), staff is also concerned that future petitions to amend may not take into consideration this

intention to legitimately classify the current amendment as a minor modification. However, EHP is aware of their burden, in accepting the District's requested NOx annual emission limit, to demonstrate that any future petition to amend properly complies with District and EPA requirements regarding classification of major and minor modifications. Such a petition would be sent to the Commission, the District and EPA for review and approval. Therefore, staff is confident that sufficient regulatory safeguards exist to assure the appropriate level of review of any such petition.

The daily and annual emission limits for NOx and CO are proposed to be less than the Elk Hills potential to emit. However, these emissions are continuously monitored by the continuous emissions monitoring system (CEMS) for Elk Hills and include annual verification of accuracy by source testing. Therefore, staff is confident that any unintentional excursions beyond the daily or annual emission limits will be captured and reported by the CEMS.

Increased Engine Size of Firewater Pump

During the refinement of the Elk Hills project design, it was determined that the original diesel powered firewater pump was insufficient in size to accomplish the specified task. EHP has determined that an engine size of 240 bhp is required. Table 2 shows the estimated emissions for the new proposed firewater pump. The estimated emissions are based on the manufacturer's information and assuming that the firewater pump is tested once a week (4 hours each test) and is expected to operate approximately 77 hours per year, but no more than 200 hours per year per Condition of Certification AQ-61. Since the Conditions of Certification do not specifically require the firewater pump to meet emission limitations, the only modification necessary is to change the description with the Conditions of Certification that begin the firewater pump section. However, these emissions are accounted for in the daily and annual emissions liability in Table 3 below.

Table 2
Estimated Emissions from the Firewater Pump

Pollutant	Hourly Emissions (lbs/hour)	Daily Emissions (lbs/day)	Annual Emissions (lbs/year)
NOx	2.31	9.23	462
CO	1.01	4.04	202
VOC	0.26	1.06	52
Sox	0.09	0.34	18
PM10	0.13	0.53	26

[a] Emissions based on a 240 bhp engine tested up to 4 hours per week and 200 hours per year.

Increased Cooling Tower Water Conservation

EHP is required by Condition of Certification Soil and Water Resources-4 to employ water conservation methods to limit water use at the Elk Hills facility to 3,000 acre-feet per year. To comply with Soil and Water Resources-4, EHP

proposed to increase the water re-circulation rate (from 104,000 gal/min to 120,000 gal/min) and the number of times water is cycled through the cooling tower (from 6 cycles to 10 cycles). These measures will increase the PM10 emissions from the cooling tower. EHP estimates that the PM10 emission limit will need to be increased from 9.3 lbs/day to 9.4 lbs/day (Condition of Certification AQ-50). Additionally, EHP is proposing to lower the design target for the drift eliminators from 0.0006% to 0.0005% (Condition of Certification AQ-49).

Increased ERC Offsets and Decreased PM10 Emissions Limit

EHP proposes to surrender additional nitrogen dioxide (NO_2) ERCs to offset the proposed increases in NOx emissions for the Elk Hills facility. However, they propose to tender NO2 ERCs in conjunction with the tendering of PM10 ERCs. EHP is allowed to tender PM10 ERCs (which are NO_2 ERCs traded per District rules for PM10 at a rate of 2.42 to 1) to offset their current permitted emission limit of 18 lbs of PM10 per hour. EHP has agreed to lower their PM10 emission limit from 18 lbs/hour to 16.2 lbs/hour rather than surrender additional NOx ERCs (Condition of Certification AQ-15). This "frees up" NOx ERCs from offsetting PM10 emissions so that they may be used to offset the proposed increase in NOx emissions. It is EHP's expectation to eventually lower the PM10 emission limit further to approximately 12 lbs/hour and re-coop the reduction as NO2 ERCs. Condition of Certification AQ-21 will be modified to reflect the proposed emission reductions as necessary.

Balance of ERCs and Project Emissions

Table 3 shows the daily and annual balance of ERCs verses proposed project emissions (refer to Appendix A for the complete details on the calculations of project emission liabilities and ERCs). Since carbon monoxide (CO) emissions would not cause or contribute to an exceedance of the state or federal ambient air quality standards, EHP is not required to provide CO ERCs (per District regulations). Table 3 shows that there is an excess of VOC emissions that will not be fully mitigated by the surrender of VOC ERCs as applied to the worst case daily emissions. The worst case daily emissions assume that Elk Hills will startup, operate at the maximum possible level and shutdown within a single day, which is a very unlikely scenario. Thus, it is unlikely that Elk Hills will cause VOC emissions that are near the daily limit. Moreover, Table 3 also shows an excess amount of NOx ERCs that will be surrendered for the Elk Hills project. VOC and NOx are offset for the purpose of mitigating potential ozone impacts, and as Table 3 shows, on a pound for pound basis, the excess NOx ERCs exceed the excess VOC emission on an annual basis. Additionally, EHP is not proposing to modify the VOC annual emission limit, only the VOC daily emission limit. Thus, from the original licensing case, the Commission found that the combination of excess VOC emissions and excess NOx ERCs were sufficient mitigation for the Elk Hills project emissions. Therefore, staff concludes that the Elk Hills project emissions are unlikely to cause or contribute to an exceedance of the state or federal ambient air quality standards for ozone. For more detailed information of the emission and ERC calculations, please refer to Appendix A.

Table 3
Elk Hills Project Emissions Liability and Emission Reduction Credits

	Elk Hills Emissions Liability[3]		ERCs Surrendered or Tendered[2]		Remaining Liability (must be zero or less)	
	lbs/day	Tons/year	lbs/day	tons/year	Lbs/day	tons/year
VOC	270.04	32.27	146.23	26.69	**123.81**	**5.58**
SOx	No change to SOx emission limits or offsets					
PM10 as NOx[1]	1,748.29	347.61	--	--	--	--
NOx	1,112.24	167.74	--	--	--	--
Total NOx	2,860.53	515.35	2,939.97	536.55	-79.44	-21.19

[1] EHP is surrendering NOx ERCs for offsetting the Elk Hills PM10 emissions at a ratio of 2.22 lbs NOx to 1 lbs PM10.
[2] The ERCs reflect the face value of the certificates and have not been reduced by any offset ratios.
[3] Emissions liability include the both CTG stacks, IC engine and cooling tower emissions.

Conclusions and Recommendations

Staff has analyzed the proposed changes and concludes that there are no new or additional significant impacts associated with approval of the petition. Staff concludes that the proposed changes are based on information that was not available during the original licensing procedures. Staff concludes that the proposed language retains the intent of the original Commission Decision and Conditions of Certification. Staff recommends the following modifications to Conditions of Certification AQ-13, -15, -16, -17, -18, 21, -49 and –50.

Proposed Modifications to the Existing Air Quality Conditions of Certification

Deleted text is in ~~strikeout~~ and new text is underlined.

AQ-13 During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines (s-3523-1-0 and —2-0) heat recovery steam generator exhausts shall not exceed any of the following limits in any one hour:

- NOx (as NO2) ~~76~~ 400lbs
- CO ~~38~~3600 lbs

Commencing two hours after turbine initial firing, CTG exhaust emissions shall not exceed any of the following:

- NOx (as NO2) 12.2 ppmv @ 15% O2
- CO 25 ppmv @ 15% O2

Verification: The project owner shall provide records of compliance as part of the quarterly reports of Condition **AQ-35.**

AQ-15 Emission rates from each CTG, except during startup or shutdown, shall not exceed any of the following emission limits:

- PM10 ~~18~~16.2 lbs/hr
- SO2 3.6 lbs/hr
- NO2 15.8 lbs/hr and 2.5 ppmvd @ 15% O2 averaged over 1-hr
- VOC 4.0 lbs/hr and 2.0 ppmvd @ 15% O2 averaged over 3-hr
- CO 12.5 lbs/hr and 4 ppmvd @ 15% O2 averaged over 3-hr
- Ammonia 10 ppmvd @ 15% O2 averaged over 24-hr

[District Rule 2201, 4001 and 4703]

Verification: The project owner shall provide records of compliance as part of the quarterly reports of Condition **AQ-35.**

AQ-16 Emission rates from each CTG~~, on days when a startup or shutdown occurs,~~ shall not exceed any of the following:

- PM10 ~~432~~388.8 lbs/day
- SO2 86.4 lbs/day
- NO2 ~~418.5~~752.0 lbs/day
- VOC ~~96.0~~184.0 lbs/day
- CO ~~326.7~~3948.0 lbs/day

[District Rule 2201]

Verification: The project owner shall provide records of compliance as part of the quarterly reports of Condition **AQ-35.**

AQ-17 Emission rates from both CTGs (S-3523-1 and -2)~~, on days when a startup or shutdown occurs for either or both turbines,~~ shall not exceed any of the following:

- PM10 ~~864.0~~777.6 lb/day
- SO2 172.8 lb/day
- NO2 ~~817.8~~1103.0 lb/day
- VOC ~~192.0~~269.0 lb/day
- CO ~~640.4~~4297.0 lb/day.

[District Rule 2201]

Verification: The project owner shall provide records of compliance as part of the quarterly reports of Condition **AQ-35.**

AQ-18 Annual emissions from both CTGs calculated on a twelve (12) consecutive month rolling basis shall not exceed any of the following: PM10 -~~315,360~~283,824 lb/year, SOx (as SO2) - 57,468 lb/year, NOx (as NO2) - ~~285,042~~335,022 lb/year, VOC - 64,478 lb/year, and CO - ~~223,040~~831,008 lb/year. [District Rule 2201]

Verification: The project owner shall provide records of compliance as part of the quarterly reports of Condition **AQ-35.**

AQ-21 Prior to or upon startup of S-3523-1-0, -2-0, & 3-0, emission offsets shall be surrendered for all calendar quarters in the following amounts, at the offset ratio specified in Rule 2201 (6/15/95 version) Table 1, PM10 - Q1: ~~78,596~~70,820 lb, Q2: ~~79,470~~71,608 lb, Q3: ~~80,343~~72,394 lb, and Q4: ~~80,343~~72,394 lb; SOx (as SO2) - Q1: 14,170 lb, Q2: 14,328 lb , Q3: 14,485 lb, and Q4: 14,485 lb; NOx (as NO2) - Q1: 65,353 lb, Q2: 66,079 lb, Q3: 66,805 lb, and Q4: 66,805 lb; and VOC - Q1: 10,967 lb, Q2: 11,089 lb, Q3: 11,211 lb, and Q4: 11,211 lb. [District Rule 2201]

Additional NOx emission offsets have been tendered for the following quantities of emission, at the appliacable offset ratio specified in Table 4-2 of District Rule 201 (as amended 12/19/02): NOx (as NO2) - Q1: 14,182 lbs, Q2: 14,340 lbs, Q3: 14,497 lbs, Q4: 14,497 lbs. [District Rule 2201]

The requirements of this condition have been meet by the surrendering of the following emission reduction credits: certificates S-1591-1 (VOC), S-1541-5 (SO2) and S-1588-2 (NO2) and the tendering of certificate S-1583-2 (NO2 for PM10).

Verification: The owner/operator shall submit copies of ERC surrendered to the SJVUAPCD in the totals shown to the CPM prior to or upon startup of the CTGs or cooling tower.

AQ-49 Drift eliminator drift rate shall not exceed ~~0.0006~~0.0005%. [District Rule 2201]

Verification: The project owner shall submit documentation from the selected cooling tower vendor that verifies the drift eliminator efficiency to the CPM thirty (30) days prior to commencement of construction of the cooling towers.

AQ-50 PM10 emission rate shall not exceed ~~9.3~~9.4 lb/day. [District Rule 2201]

Verification: Please refer to Condition **AQ-51**.

Language preceding Condition of Certification AQ-53:

SAMPLE EQUIPMENT DESCRIPTION: ~~125 HP PERKINS/DETROIT DIESEL MODEL PDFP-06YR~~ 240-HP CUMMINS MODEL 6CTA8.3-F2 DIESEL-FIRED IC ENGINE DRIVING EMERGENCY FIRE WATER PUMP S-3523-4-0:

Appendix A

Emission Calculations

Startup ad Shutdown
(also Worst Case Hour)

Both Turbines		Cold Start	Warm Start	Shutdown		
lim	NOx	400	320	102.5	lbs/hour	lim
lim	CO	3600	2880	222	lbs/hour	lim
est	PM10	129.6	64.8	32.4	lbs/event	est
est	SOx	28.8	14.4	7.2	lbs/event	est
est	VOC	100	74	16.8	lbs/event	est

Operational

BASELOAD			
Each Turbine Exhaust		lbs/hr	
est	NOx	15.8	
est	CO	12.4	
est	PM10	16.2	
est	SOx	3.3	
est	VOC	3.7	
PEAK LOAD			averaging
lim	NOx	15.8	1 hour
lim	CO	12.5	3 hour
lim	PM10	16.2	3 hour
lim	SOx	3.6	3 hour
lim	VOC	4	3 hour
Firewater Pump			
est	NOx	2.31	
est	CO	1.01	
est	PM10	0.13	
est	SOx	0.09	
est	VOC	0.26	
Cooling Tower			
est	PM10	0.39166667	limit is 9.4 lbs/day

est - Estimated emissions based on expected operation.
lim - Emissions based on limites established in the Conditions of Certification.

Worst Case Day

Event		Duration	NOx	CO	VOC	PM10
Startup	2 CTGs	8.0	3,200.0	28,800.0	100.0	129.6
Peakload	2 CTGs	38.0	600.4	475.0	152.0	615.6
Shutdown	2 CTGs	2.0	102.5	222.0	16.8	32.4
Subtotal	2 CTGs	48.0	3,902.9	29,497.0	268.8	777.6
Subtotal	1 CTG	24.0	1,951.5	14,748.5	134.4	388.8
Proposed Emission Limits		**each CTG**	**752.0**	**3,948.0**	**184.0**	**388.8**
		both CTGs	**1,103.0**	**4,297.0**	**269.0**	**777.6**
Firewater Pump-Testing		4.0	9.2	4.0	1.0	0.5
Cooling Tower		24.0				9.4
Facility Total			**1,112.2**	**4,301.0**	**270.0**	**787.5**

Worst Case Annual **lbs/year**

Event		Duration	NOx	CO	VOC	PM10
Startup	2 CTGs, 12 4-hr @	96.0	19,200.0	172,800.0	1,200.0	1,555.2
Startup	2 CTGs, 188 2-hr @	752.0	120,320.0	1,082,880.0	13,912.0	12,182.4
Operation	2 CTGs, Baseload	14,320.0	226,256.0	177,568.0	52,984.0	231,984.0
	2 CTGs, Peak load	1,952.0	30,841.6	24,400.0	7,808.0	31,622.4
Shutdown	2 CTGs, 200 1 hr @	400.0	41,000.0	88,800.0	3,360.0	6,480.0
	Subtotal, 2 CTG	**17,520.0**	**437,617.6**	**1,546,448.0**	**79,264.0**	**283,824.0**
	Subtotal, 1 CTG	8,760.0	218,808.8	773,224.0	39,632.0	141,912.0
	Permitted Limits	**both CTGs**	**335,022.0**	**831,008.0**	**64,478.0**	**283,824.0**
			77%			
Firewater Pump		200.0	462.0	202.0	52.0	26.0
Cooling Tower		8,760.0				3,431.0
	Facility Total		**335,484.0**	**831,210.0**	**64,530.0**	**287,281.0**

Tons/year

Event		Duration	NOx	CO	VOC	PM10
Startup	2 CTGs, 12 4-hr @	96.0	9.60	86.40	0.60	0.78
Startup	2 CTGs, 188 2-hr @	752.0	60.16	541.44	6.96	6.09
Operation	2 CTGs, Baseload	14,320.0	113.13	88.78	26.49	115.99
	2 CTGs, Peak load	1,952.0	15.42	12.20	3.90	15.81
Shutdown	2 CTGs, 200 1 hr @	400.0	20.50	44.40	1.68	3.24
	Subtotal, 2 CTG	**17,520.0**	**218.81**	**773.22**	**39.63**	**141.91**
	Subtotal, 1 CTG	8,760.0	109.40	386.61	19.82	70.96
	Based on Permitted Limits	**both CTGs**	**167.51**	**415.50**	**32.24**	**141.91**
Firewater Pump		200.0	0.23	0.10	0.03	0.01
Cooling Tower		8,760.0	0.00	0.00	0.00	1.72
	Facility Total		**167.74**	**415.61**	**32.27**	**143.64**

Proposed ERCs Requirements

	Quarterly Totals (lbs)				Annual Totals			
	First	Second	Third	Fourth	Lbs	Tons	lbs/day	
PM10	70,820	71,608	72,394	72,394	287,216	143.61	786.89	To be tendered
SO2	14,170	14,328	14,485	14,485	57,468	28.73	157.45	To be surrendered
NO2	65,353	66,079	66,805	66,805	265,042	132.52	726.14	To be surrendered
VOC	10,967	11,089	11,211	11,211	44,478	22.24	121.86	To be surrendered
NO2	12,324	12,461	12,598	12,598	49,981	24.99	136.93	Excess from tendering to be surrendered

ERCs Surrendered or Tendered

			Quarterly Totals (lbs)				Annual Totals			
Certificate	Pollutant	Applicable Distance Ratio	First	Second	Third	Fourth	Lbs	Tons	lbs/day	
S-1583-2	NO2	1.2	190202	192317	194430	194430	771379	385.69	2,113.37	Tendered
S-1588-2	NO2	1.2	78424	79295	80166	80166	318051	159.03	871.37	Surrendered
S-1541-5	SO2	1.2	17004	17194	17382	17382	68962	34.48	188.94	Split
S-1591-1	VOC	1.2	13160	13307	13453	13453	53373	26.69	146.23	Surrendered

Demonstration of Compliance

Annual (lbs/year)

	Liability	Offset ratio	ERC	Liability-ERC	
SO2	57,468	1.2	57,468	0	
VOC	44,478	1.2	44,478	0	
NOx	315,023	1.2	907,858	-592,835	to be used to offset PM10
PM10	287,216	2.42	293,968	-16,340	expected excess to be returned to EHP as NOx ERCs

Daily (lbs/day)

	Liability	Offset ratio	ERC	Liability-ERC	
SO2	157	1.2	157	0	
VOC	122	1.2	122	0	
NOx	863	1.2	2,487	-1,624	to be used to offset PM10
PM10	787	2.42	805	-45	expected excess to be returned to EHP as NOx ERCs